

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/07513

A. CLASSIFICATION OF SUBJECT MATTER  
Int.Cl<sup>7</sup> H01L23/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> H01L23/12, H01L21/60, H01L23/50, H01L25/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2002

Kokai Jitsuyo Shinan Koho 1971-2002 Jitsuyo Shinan Toroku Koho 1996-2002

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                       | Relevant to claim No. |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y         | JP 9-223705 A (Hitachi, Ltd.),<br>26 August, 1997 (26.08.97),<br>Column 4, line 29 to column 10, line 31; Figs. 2 to 5                                                                                                   | 1                     |
| A         | Column 4, line 29 to column 8, line 17; column 12, line 22 to column 14, line 36; Figs. 11 to 13<br>(Family: none)                                                                                                       | 2                     |
| Y         | US 6025640 A (Dai Nippon Insatsu Kabushiki Kaisha),<br>15 February, 2000 (15.02.00),<br>Column 6, line 33 to column 7, line 48; Figs. 4 to 6<br>& JP 11-233683 A<br>Column 7, line 47 to column 9, line 13; Figs. 4 to 6 | 1                     |

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

|                                                                                                                                                                         |                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| * Special categories of cited documents:                                                                                                                                | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention                                              |
| "A" document defining the general state of the art which is not considered to be of particular relevance                                                                | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone                                                                     |
| "E" earlier document but published on or after the international filing date                                                                                            | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" document member of the same patent family                                                                                                                                                                                                    |
| "O" document referring to an oral disclosure, use, exhibition or other means                                                                                            |                                                                                                                                                                                                                                                  |
| "P" document published prior to the international filing date but later than the priority date claimed                                                                  |                                                                                                                                                                                                                                                  |

Date of the actual completion of the international search  
29 October, 2002 (29.10.02)Date of mailing of the international search report  
12 November, 2002 (12.11.02)Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                       | Relevant to claim No. |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| A         | JP 7-312404 A (Hitachi, Ltd.),<br>28 November, 1995 (28.11.95),<br>Column 6, lines 33 to 37; column 8, lines 13 to 21;<br>Figs. 1 to 5<br>(Family: none) | 1-3                   |
| E,A       | JP 2002-313980 A (Niigata Seimitsu Co., Ltd.),<br>25 October, 2002 (25.10.02),<br>Column 4, line 5 to column 6, line 7; Figs. 1, 2<br>(Family: none)     | 1-3                   |